Agricultural Power and Equipment

Course Description: Agricultural Power and Equipment includes basic

information and laboratory activities on small engines, tractors and agricultural equipment maintenance, repair and overhaul. The standards address competencies for electrical motors, hydraulic

systems and fuel-powered engines.

Recommended Pre-requisites: Agriscience (HQ), Principles of Agricultural Sciences

or Principles of Horticultural Sciences

Recommended Credit(s): 1 or 2

Recommended Grade Levels: 11th or 12th

Course Codes:*** A10 – **5102** or A12 - **5152**

* 1 denotes learning expectations that would be met when teaching the course one credit.

** All other learning expectations would be met when teaching the course for two credits.

***Use A12 Course Code number for all programs. A10 should be used for 10 month programs only.

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Agricultural Power and Equipment

Standard 1.0

Demonstrate the safe use of agricultural tools and equipment.

Standard 2.0

Summarize the theory of engine operation.

Standard 3.0

Prescribe the basic operation of agricultural machinery.

Standard 4.0

Specify the correct use of precision instruments and basic tools to make settings on agricultural power equipment and small engines to manufacturer's specifications.

Standard 5.0

Evaluate troubleshooting techniques to assess engine failure problems.

Standard 6.0

Relate engine components to various systems.

Standard 7.0

Read and interpret diagrams and schematics related to agricultural equipment.

Standard 8.0

Compare the characteristics and uses for a variety of fuels and lubricants.

Standard 9.0

Demonstrate electrical motor operation, maintenance, and application.

Standard 10.0

Evaluate career opportunities available in agricultural power and equipment.

Standard 11.0

Integrate academic competencies in agricultural power and equipment.

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Standard 12.0

Demonstrate premier leadership and personal growth needed for success and advancement in the career area of agricultural mechanics.

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Agricultural Power and Equipment

Cou	rse Description:	Agricultural Power and Equipment includes basic information and laboratory activities on small engines, tractors and agricultural equipment maintenance, repair and overhaul. To standards address competencies for electrical motors, hydraulic systems and fuel-powered engines.	
Star	ndard 1.0		
		use of agricultural tools and equipment.	
		and Performance Indicators:	
1.1		safe use of shop tools and equipment.	1
1.2		color codes used in a shop environment.	1
1.3		lasses of fire and correlate them with the appropriate fire	1
1.4	extinguishers.	procedures to be used in a shop environment	1 1
1.5		procedures to be used in a shop environment. safety test with 100 percent accuracy.	1
1.5	Complete a shop s	salety test with 100 percent accuracy.	1
Star	ndard 2.0		
		y of engine operation.	
Lear	ning Expectations	and Performance Indicators:	
2.1	Compare the diffe	rence characteristics of a motor and an engine.	1
2.2	Summarize the for	ur-stroke cycle and the events that occur during each stroke	. 1
2.3		in the function of the basic engine parts involved in the four-	
	stroke cycle engin		1
2.4		vo-stroke cycle and the events that occur during each stroke.	1
2.5	1 0 1	in the basic engine parts involved in the two-stroke cycle.	1
2.6	Distinguish betwe	en gasoline and diesel engines.	1
Star	idard 3.0		
		peration of agricultural machinery.	
		and Performance Indicators:	
3.1		e maintenance procedures for safe and proper operation of	
	agricultural mach	inery	2
	1 2 1	in the functions of agricultural equipment.	2
3.3	_	principles of restoring Agricultural equipment and prepare a	
	written project rep	port.	2
Star	idard 4.0		
		se of precision instruments and basic tools to make setti	ngs
_	•	equipment and small engines to manufacturer's	8-
	cifications.		
_		and Performance Indicators:	
4.1		proper used of tools in making precision measurement.	1
4.2	Record and interp	ret data from precision measurements.	1
4.3	Demonstrate safe	use of precision tools and equipment.	1

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Standard 5.0

Evaluate troubleshooting techniques to assess engine failure problems. Learning Expectations and Performance Indicators: 5.1 Diagnose common engine problems and explain the cause and preventative measures. 5.2 Write an inspection customer report including parts and repair cost. 5.2 Categorize and explain prevention of major causes of engine failures. Standard 6.0 Relate engine components to various systems. Learning Expectations and Performance Indicators: 6.1 Differentiate the parts and function of each engine system. 6.2 Specify the components and functions of hydraulic systems. 2 Standard 7.0 Read and interpret diagrams and schematics related to agricultural equipment. Learning Expectations and Performance Indicators: 7.1 Read and interpret hydraulic system schematics. 7.2 Read and interpret electrical schematics. 2 Read and interpret electrical schematics. 2 Standard 8.0 Compare the characteristics and uses for a variety of fuels and lubricants. Learning Expectations and Performance Indicators: 8.1 Evaluate and explain the grades of diesel and their uses. 8.2 Evaluate and explain the grades of diesel and their uses. 8.3 Evaluate and explain the grades of diesel and their uses. 8.4 Evaluate and explain the grades of diesel and their uses. 8.5 Evaluate and explain the procedures by service, grade and function. 1 Evaluate and explain the basic parts of an electric motor. 9.1 Evaluate types of electric motors and their agricultural applications. 9.2 Analyze and explain the procedures for maintaining electric motors. 9.3 Perform an electric motor installation. 2 Specify and explain the procedures for maintaining electric motors. 2 Standard 10.0 Evaluate career opportunities available in Agricultural power and equipment. Learning Expectations and Performance Indicators: 10.1 Research and prepare a written report on careers and jobs associated with agricultural power. 10.2 Specify training and skills needed for careers in agricultural power industries. 11.1 Use current resources t		iluaru 5.0	
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11.4 Read instruments in metric and English.	1
11.5 Calculate ratios and percentages in basic shop skills.	1
11.6 Explain physical properties involved in combustion.	1
11.7 Explain basic hydraulic principles using Pascal's law.	1
11.8 Explain basic laws of electricity.	1
Standard 12.0	
Demonstrate premier leadership and personal growth needed for success and	
advancement in the career area of agricultural mechanics.	
Learning Expectations and Performance Indicators:	
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